

ART. XX.—*Earthworms from the Kermadecs.*

By W. B. BENHAM, D.Sc., M.A., F.Z.S., &c., Professor of
Biology in the University of Otago.

[Read before the Otago Institute, 8th November, 1904.]

Plates XIII. and XIV.

OWING to the thoughtfulness of Mr. R. Shakespear, of Little Barrier Island, I am indebted to Captain Bollons, of the Government steamer "Hinemoa," for the first samples of the Oligochaeta that have been collected in the Kermadecs. Captain Bollons was good enough to take a considerable amount of trouble to obtain these worms. The soil forms, he tells me, a very thin covering of decayed vegetation upon pumice rock, and he was unsuccessful in his earlier efforts to find any earthworms, but finally, at Coral Bay, his persistency was rewarded. My best thanks are due to these gentlemen for their kindness.

I received the specimens alive, packed with soil and moss in a tin box: they consisted of three small earthworms and six Enchytraeids. Of the earthworms, two were immature individuals of some species of the genus *Allolobophora* belonging to the family Lumbricidae—the members of which are readily transported, and are, as a matter of fact, widely distributed by the agency of man. Though I am unable to identify the species to which these individuals belong, there can be little doubt but that they have been "introduced" by some means, though Captain Bollons states that this part of the island has never been inhabited; nevertheless, some parts have been occupied, and there can be no difficulty in explaining the presence of these worms here. The third worm is mature, and belongs to the genus *Rhododrilus*,* which, according to Michaelsen's most recent writings, has its headquarters in New Zealand, and is represented on both the main islands as well as on the outlying islands. The present species, however, differs from any hitherto described, and I propose to name it

Rhododrilus kermadecensis, n. sp.

Colour.—Pinkish, with transparent body-wall.

Dimensions.—Length, 65 mm.; diameter, 1.75 mm.; with 108 segments.

Chaetae.—The eight bristles are wide apart, and approximately their arrangement in the midbody is $ab = \frac{1}{2}bc$; $bc = cd = 2ab$; $aa = bc$; $dd = 2cd$. But at about the 20th segment the lines

* It appears from a recent work by Michaelsen that he would fuse the species of *Rhododrilus* with those of *Microscotex*, the older genus. I have given reasons in a paper forwarded to the Zoological Society for distinguishing the two genera.

of *c* and *d* descend slightly, so that the gap *bc* is reduced, and *dd* increased, in the forepart of the body.

Prostomium epilobic, about one-half, without a posterior transverse groove.

Clitellum covers segments 13–18 inclusive. The ventral chætæ and intersegmental furrows are visible, though the skin is somewhat thickened across the ventral surface.

Genital Pores, &c.—A pair of large porophores on the 17th segment, in line with chætæ *ab*; and in front of the chætæ there is a single large median “copulatory tubercle,” in the form of an oval glandular pad, not very prominent, covering the whole of the ventral surface of segment 19, and the prechætal region of the 20th.

Dorsal pores are visible posteriorly.

Internal Anatomy.—In the bisected individual I made out the following points, sufficient to characterize the species: The dorsal blood-vessel is enlarged in segments 14, 15, and 16; the last hearts are in the 13th segment. The gizzard is quite minute, in segment 5. There is no œsophageal gland, though the tube is dilated in the 13th and 14th segments. The intestine commences in the 18th.

The Reproductive System.—The sperm-sacs lie in segments 9, 11, and 12. The prostate is a large, tongue-shaped gland, extending through the six segments 17–22, with a short muscular duct in the 17th. A couple of long chætal sacs underlie the prostate, extending back from the 17th to the 21st segment. Each sac contains three chætæ—a functional “penial chætæ” and two smaller ones at different stages of development. The penial chætæ (Plate XIV., figs. 4, 5) is long, delicate, and bent distally. The tip is curved, spoon-shaped, so that the side and top views differ. The surface is quite devoid of ornamentation.

There are three pairs of spermathecæ, in the segments 7, 8, and 9. Each (Plate XIV., fig. 1) is an ovoid sac, with a short muscular duct about half the diameter of the sac. It receives close to the body-wall a long cylindrical diverticulum, which in the specimen studied is curved in an S-shaped manner. The tip is not dilated (till compressed), but the base is enlarged at its union with the duct.

Remarks.—In the possession of three pairs of spermathecæ this species resembles *R. cockayni* from Campbell Island, from which, however, it differs in its colour, dimensions, arrangement of copulatory tubercle, and form of penial chætæ.

ART. XXI. — *Note on the Occurrence of the Foraminiferan Genus Ramulina in the New Zealand Waters.*

By W. B. BENHAM, D.Sc., M.A., F.Z.S., &c., Professor of Biology, University of Otago.

[Read before the Otago Institute, 13th September, 1904.]

DURING a dredging excursion in the summer of 1904, in which Mr. Charles Hedley, of the Australian Museum, Messrs. Suter, Cooper, Park, Murdoch, and others, took part, several interesting animals were obtained at a depth of about 100 fathoms, and amongst them the peculiar glassy foraminifer *Ramulina globulifera*. This has been described from the New Zealand waters by Brady, in the "Report of the 'Challenger' Expedition" (vol. ix.), but as it has escaped the notice of Mr. Hamilton, who drew up the admirable abstract from the "Summary," and published by the New Zealand Institute under the title of "Deep-sea Fauna of New Zealand," and as it is not enumerated in the "Index Faunæ Novæ-Zelandiæ," it seems desirable to place on record its occurrences within the New Zealand area.

The specimens which were handed to me by Mr. Hamilton for identification were obtained at a depth of 110 fathoms, east of Great Barrier Island, lat. 36° 8' S., long. 175° 55' E.

The following is quoted from Brady (*loc. cit.*, p. 587) :—

"Fam. LAGENIDÆ.

"Subfam. RAMULINÆ.

"Test branching, composed of spherical or pyriform chambers, connected by long stoloniferous tubes.

"*Ramulina*, Rupert Jones (1875).

"Test free, branching; consisting of a calcareous tube swollen at intervals so as to form more or less definite, often irregular, segments, from which lateral stolons or branches are given off. Texture hyaline."

R. globulifera, Brady (1869) was obtained by the "Challenger" off the west coast of New Zealand in 145 and 275 fathoms (the latter was at station 166).

It has been met with on various stations in the Pacific, and also in the North Atlantic.

Figures of the species are given on pl. lxxvi, figs. 22-28, of vol. ix., "Challenger" Reports.